Water Supply Planning

Santa Clara County Flood Control
and Water District

ANNUAL SURVEY REPORT
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on
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GROUND WATER CONDITIONS

1968

February 1968

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and Water District

ANNUAL SURVEY REPORT
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GROUND WATER CONDITIONS

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santa clara county
FLOOD CONTROL AND WATER DISTRICT

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February 6, 1968

The Board of Supervisors
Santa Clara County Flood Control
and Water District
70 West Hedding Street
San Jose, California 95110

Gentlemen:

I am pleased to transmit to you the District Engineer's Annual Survey Report on Ground Water Conditions in the Santa Clara County Flood Control and Water District for 1968. The Report was prepared under the authority of Section 26.5 of the District Act and is the sixth of an annual series required as a prerequisite to the levy of the ground water charge on the production of water from the ground water supplies within a zone or zones of the District.

The reported investigation finds that an overdraft condition continues to exist in the Santa Clara Valley Ground Water Basin but that it is about one-half of what it has been in past years because of the increased importation of South Bay Aqueduct water. The accumulated overdraft in the Santa Clara Valley Ground Water Basin as of the end of the preceding (1966-67) water year was estimated to be about 685,000 acre-feet, zero acre-feet for the Coyote Ground Water Basin, and zero acre-feet for the Llagas Ground Water Basin.

During 1966-67 about 31,800 acre-feet of imported water was delivered through the South Bay Aqueduct and the District's In-County Water Distribution System. In June 1967 the first surface delivered treated water from the District's Rinconada Water Treatment Plant became available, and in that month 305 acre-feet was delivered to treated water customers. The remainder of this imported water was used to recharge the ground water basin. Barring outages in the South Bay Aqueduct, it is estimated that the District will receive 76,600 acre-feet from that source in the current (1967-68) water year.

The Board of Supervisors February 6, 1968

I concur with the findings presented in this report and recommend that they be adopted as the prerequisite to the levy of ground water charges for fiscal year 1968-69 in the zones of the District.

Sincerely yours,

Donald K Curlin

Manager-Counsel

ANNUAL SURVEY REPORT
ON
GROUND WATER CONDITIONS
1968

This is the sixth annual survey report on ground water conditions in the Santa Clara County Flood Control and Water District. This is a summary type report which follows the methodology set forth in detail in previous survey reports, and summarizes the ground water conditions in the various ground water basins of the District during the preceding water year.

This report provides the information, required by Section 26.5 of the District Act, which serves as a basis for the determination by the District Board of Directors of the ground water charges for the ensuing water year, 1968-69.

There are three major interconnected ground water basins occupying 240,000 of the 849,000 acres in Santa Clara County, whose borders are conterminous with those of the District. The three major basins shown on Plate 1 are the Santa Clara Valley, the Coyote, and the Llagas Ground Water Basins. At the prescribed time for filing this report the only area in which a ground water charge is levied by the District is Zone W-2, the boundaries of which closely follow the boundaries of the Santa Clara Valley Ground Water Basin. However, at the time when this report will be subject to a public hearing, the Santa Clara Valley Water Conservation District (which levies ground water charges in portions of Zone W-2 and in areas outside of Zone W-2) will have been merged with the Santa Clara County Flood Control and Water District.

Utilizing information gathered by the District and cooperating agencies, a mass balance of water inflow-outflow for the ground water basins of the District has been prepared in conformance with the methods utilized in previous reports and reference is made to the 1967 report for additional details. Table 1 lists the principal items of water supply and disposal and shows an 86,000 acre-foot surplus for the Santa Clara Valley Ground Water

TABLE 1

SUMMATION OF THE ANNUAL ITEMS OF WATER SUPPLY & WATER DISPOSAL TO THE GROUND WATER BASINS OF THE DISTRICT FOR THE WATER YEAR 1966-67

Values in Acre-Feet

Item	Ground Water Basin			Total
	Santa Clara Valley	Coyote	Llagas	
Water Supply				
Precipitation	323,000	21,000	144,000	488,000
Stream & Surface Inflow	179,000	18,000	121,000	318,000
Subsurface Inflow	43,000	5,000	13,000	61,000
Import	53,000	0	0	53,000
Subtotal	598,000	44,000	278,000	920,000
Water Disposal				
Consumptive Use	289,000	21,000	115,000	425,000
Stream Outflow	128,000	10,000	95,000	233,000
Subsurface Outflow	0	10,000	9,000	19,000
Export (sewage)	95,000	0	2,000	97,000
Subtotal	512,000	41,000	221,000	774,000
Water Supply-Water Disposal = Surplus (+) or Deficiency (-)	+ 86,000	+ 3,000	+ 57,000	+ 146,000

Basin for the 1966-67 water year, a year of above-average rainfall. In the 1966-67 water year, 31,766 acre-feet of imported water was delivered through the South Bay Aqueduct.

Calculations of the accumulated overdraft in 1967 for the Santa Clara Valley Ground Water Basin indicate that there has been a loss of ground water in storage from the desirable level of storage of 685,000 acre-feet. This is a significant reduction from that computed for the previous year because of the above-average precipitation and increased importation of water. However, the continued heavy withdrawals of ground water coupled with the inability of the basin to convey the recharged water to areas of use has resulted in continued land subsidence due to the compaction of the sediments dewatered by the lowered ground water levels.

The configuration of the ground water table in 1967 for the three major ground water basins of the District is indicated by the contours shown on Plate 2. These ground water table contours show in the Santa Clara Valley Ground Water Basin local depressions resulting from concentrated withdrawals. However, the ground water basins all show a recovery from the low levels of the previous year because of the above-average water supply.

The estimated average annual overdraft is formulated by the use of long-time average seasonal amounts of natural water supply and disposal together with the previous year's (1966-67) values of import, export, and consumptive use. This formulation gives the long-term averages of water supply and disposal under present conditions and shows whether or not a water supply overdraft exists. The result, shown in Table 2, is that an annual overdraft of 19,000 acre-feet exists in the Santa Clara Ground Water Basin, and that no overdraft exists in either the Coyote or Llagas Ground Water Basins.

Estimated seasonal ground water extractions for the preceding (1966-67), current (1967-68) and ensuing (1968-69) water years are summarized in Table 3. Values for the water year 1966-67 in the Santa Clara Valley Ground Water Basin are based on statements submitted by ground water

TABLE 2

SUMMATION OF THE AVERAGE SEASONAL ITEMS OF WATER SUPPLY AND WATER DISPOSAL UNDER PRESENT CONDITIONS TO THE GROUND WATER BASINS OF THE DISTRICT

Values in Acre-Feet

Item	Ground Water Basin			Totals
	Santa Clara Valley	Coyote	Llagas	
Water Supply				
Precipitation	214,000	15,000	101,000	330,000
Stream & Surface Inflow	160,000	68,000	58,000	286,000
Subsurface Inflow	19,000	5,000	12,000	36,000
Import	53,000	0	0	53,000
Subtotal	446,000	88,000	171,000	705,000
Water Disposal				
Consumptive Use	289,000	21,000	115,000	425,000
Stream Outflow	81,000	59,000	49,000	189,000
Subsurface Outflow	0	8,000	5,000	13,000
Export	95,000	0	2,000	97,000
Subtotal	465,000	88,000	171,000	724,000
Water Supply minus Water Disposal = Average Seasonal Over-draft (-) or Surplus (+)	-19,000	0	0	-19,000

users as a requirement of the District's ground water charge, whereas all other values are estimates based on assumed average year conditions and on adjusted agricultural acreage.

During the 1966-67 water year 31,766 acre-feet of South Bay Aqueduct water was imported. Of this amount 31,457 acre-feet was delivered to percolation ponds for recharge into the Santa Clara Valley Ground Water Basin. In the month of June 1967, 305 acre-feet of imported water was treated at the District's Rinconada Water Treatment Plant and delivered to the consumer through retail water agencies. In addition, 4 acre-feet of raw water was delivered on the surface for irrigation. In the current water year (1967-68) about 76,600 acre-feet of water is scheduled for delivery and in the ensuing (1968-69) water year a delivery of 88,000 acre-feet has been requested.

To pay for the District's share of the County-wide water importation program, a limited County-wide ad valorem tax and a ground water charge for water extracted from the ground water basin or delivered on the surface in lieu of extraction from Zone W-2 was levied in the water year 1966-67. In addition, charges for surface delivered treated water are made to repay the costs of the treatment plant, its operation and maintenance, and its share of the In-County Water Distribution System costs. In the 1966-67 water year the District continued the levy of a County-wide ad valorem tax of five cents per 100 dollars assessed valuation, and the ground water charges in Zone W-2 of $5.00 per acre-foot for water extracted for agricultural use and $16.00 per acre-foot for water extracted for other than agricultural use. In addition, a service charge of $1.00 per acre-foot was levied for raw water delivered to customers on the surface. The charge for treated water was $62.00 per acre-foot.

The actual income and expenditures for the 1966-67 water year are given in Table 4. The same information for the 1967-68 water year is not presented because the final figures are not available and the estimated

TABLE 3

ESTIMATED SEASONAL GROUND WATER EXTRACTIONS FROM THE GROUND WATER BASINS OF THE DISTRICT*

Values in Acre-Feet

	Ground Water Basin			
Water Year and Use	Santa Clara Valley	Coyote	Llagas	Total
1966-67				
Agric. Use	30,000	7,000	41,000	78,000
Urban Use	128,000	2,000	10,000	140,000
Total	158,000	9,000	51,000	218,000
1967-68				
Agric. Use	32,000	8,000	45,000	85,000
Urban Use	130,000	2,000	10,000	142,000
Total	162,000	10,000	55,000	227,000
1968-69				
Agric. Use	31,000	8,000	45,000	84,000
Urban Use	130,000	2,000	10,000	142,000
Total	161,000	10,000	55,000	226,000

*Reported extractions are shown for Santa Clara Valley Ground Water Basin in 1966-67, all other values are based on estimates. Predicted values for 1967-68 and 1968-69 are based on average water supply year.

income and expenditures were presented in the 1967 Ground Water Conditions Report. The estimated expenditures for the 1968-69 water year are also presented in Table 4. This estimate includes the total expenditures of the merged Santa Clara Valley Water Conservation District and the Santa Clara County Flood Control and Water District. These estimates will serve as the bases of the ground water charges to be levied for the ensuing (1968-69) water year by the District Board of Directors.

TABLE 4

INCOME & EXPENDITURES

Actual Preceding (1966-67) Water Year		Estimated Ensuing (1968-69) Water Year	
Income			
Taxes [1]	$ 812,716		
Ground Water Charge	2,036,446		
Surface Water Charge	29,783		
Treated Water Charge	0		
Other	531,374		
Total	$3,410,319		
Expenditures [2]		**Expenditures** [2]	
State		State	
Capital Cost	$ 651,708	Capital Cost	$1,119,600
Fixed Oper. & Maint.	166,360	Fixed Oper. & Maint.	245,500
Variable Oper. & Maint.	152,116	Variable Oper. & Maint.	451,700
Water Charge	187,969	Water Charge	471,800
District		District	
Admin. & Water Use	249,870	Admin. & Water Use	279,000
Engineering	78,586	Engineering	131,000
Operations	96,297	Operations	820,000
Bond Redemption		Bond Redemption	
Series A	629,682	Santa Clara County Flood Control and Water District (Series A-C)	1,668,900
Series B	706,202	Santa Clara Valley Water Conservation District (Series 3-7)	504,200
Total	$2,918,790	Total	$5,691,700

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[1] Net taxes after rebate to areas using Hetch-Hetchy water

[2] Expenditures in 1966-67 are for the Santa Clara County Flood Control and Water District, only; estimated expenditures in 1968-69 are for the merged Districts.

Findings

As a result of the investigation summarized above the following findings and determinations may be made:

1. The annual water supply surplus (+) or deficiency (-) for the ground water basins of the District for the preceding (1966-67), current (1967-68), and ensuing (1968-69) water years is estimated to be (in acre-feet):

Ground Water Basin	Preceding	Current	Ensuing
Santa Clara Valley	+86,000	+19,000	+16,000
Coyote	+ 3,000	0	0
Llagas	+57,000	0	0

2. The accumulated overdraft as of the end of the preceding (1966-67) water year in the Santa Clara Valley Ground Water Basin is estimated to be 685,000 acre-feet, zero in the Coyote Ground Water Basin, and zero in the Llagas Ground Water Basin.

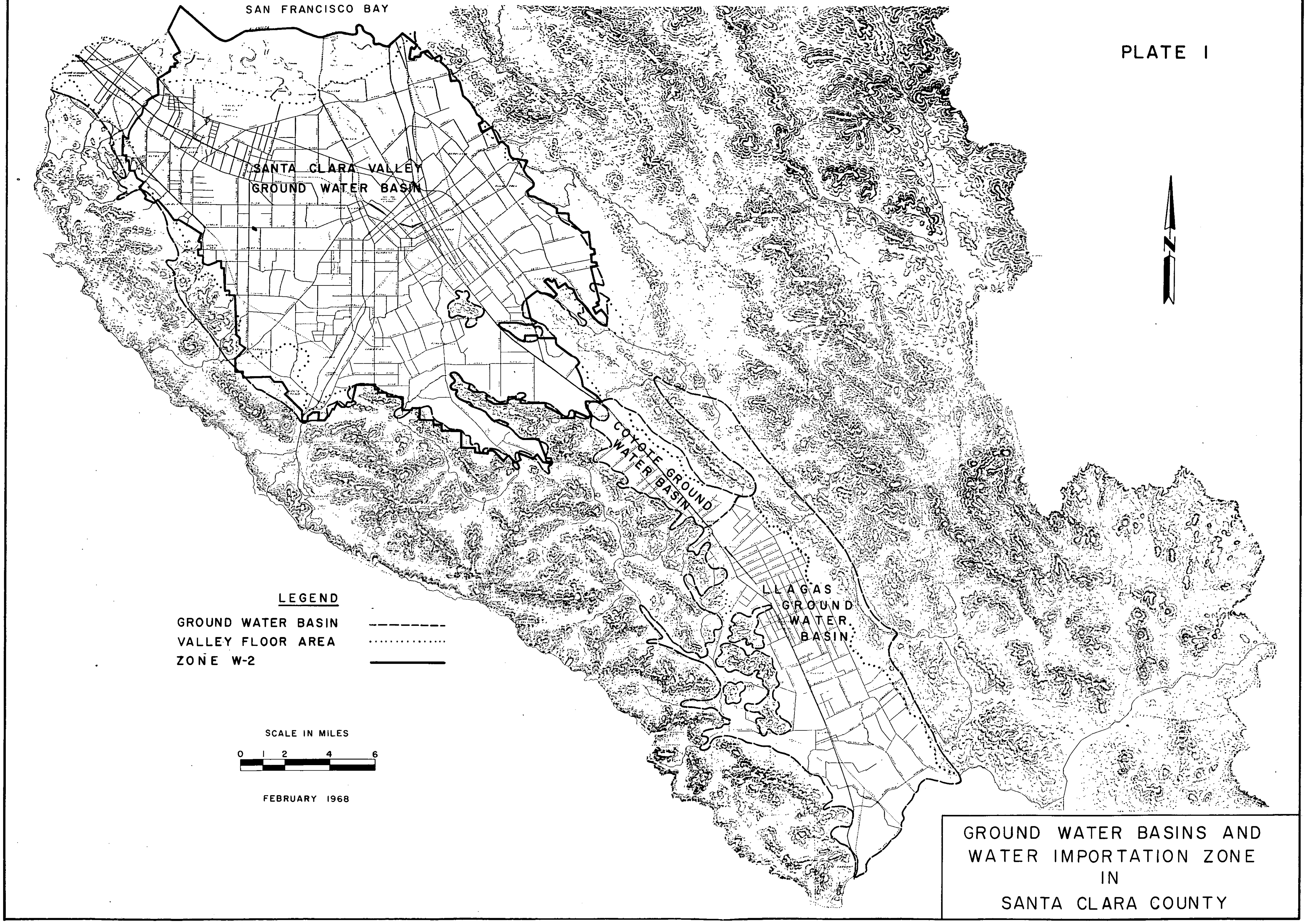
3. The estimated amounts of ground water extracted or to be extracted from the ground water basins of the District for the preceding (1966-67), current (1967-68), and ensuing (1968-69) water years are in acre-feet:

Ground Water Basin	Preceding	Current	Ensuing
Santa Clara Valley	158,000	162,000	161,000
Coyote	9,000	10,000	10,000
Llagas	51,000	55,000	55,000

4. The configuration of the ground water table at the end of the preceding (1966-67) water year is shown on Plate 2 and the change from the previous year is one of limited recovery.

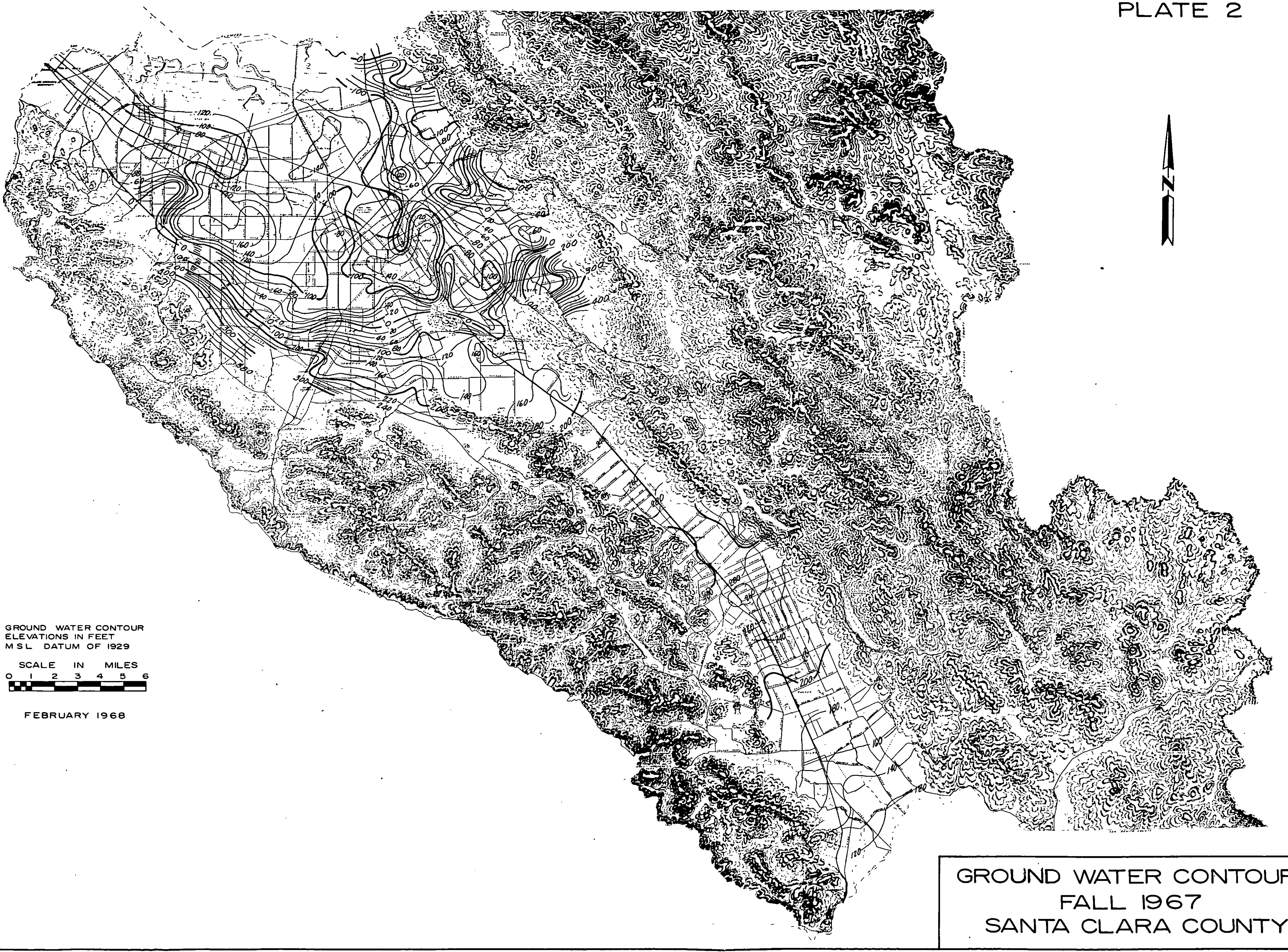
5. The District is obligated by contract to purchase 88,000 acre-feet of imported water from the South Bay Aqueduct in the ensuing (1968-69) water year.

PLATE I



GROUND WATER BASINS AND WATER IMPORTATION ZONE IN SANTA CLARA COUNTY

PLATE 2



GROUND WATER CONTOUR
ELEVATIONS IN FEET
MSL DATUM OF 1929

SCALE IN MILES
0 1 2 3 4 5 6

FEBRUARY 1968

GROUND WATER CONTOURS
FALL 1967
SANTA CLARA COUNTY